

(No Model.)

A. HEALD.  
WOVEN FABRIC.

No. 431,844.

Patented July 8, 1890.

FIG. 1.

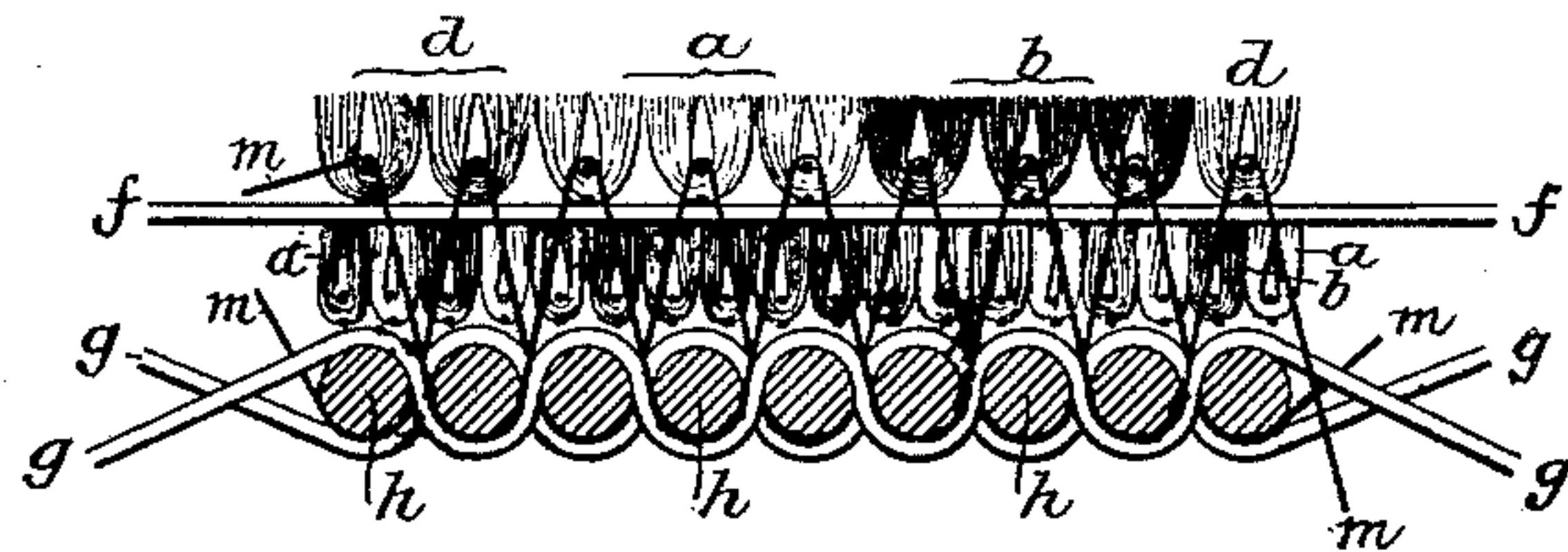


FIG. 2.

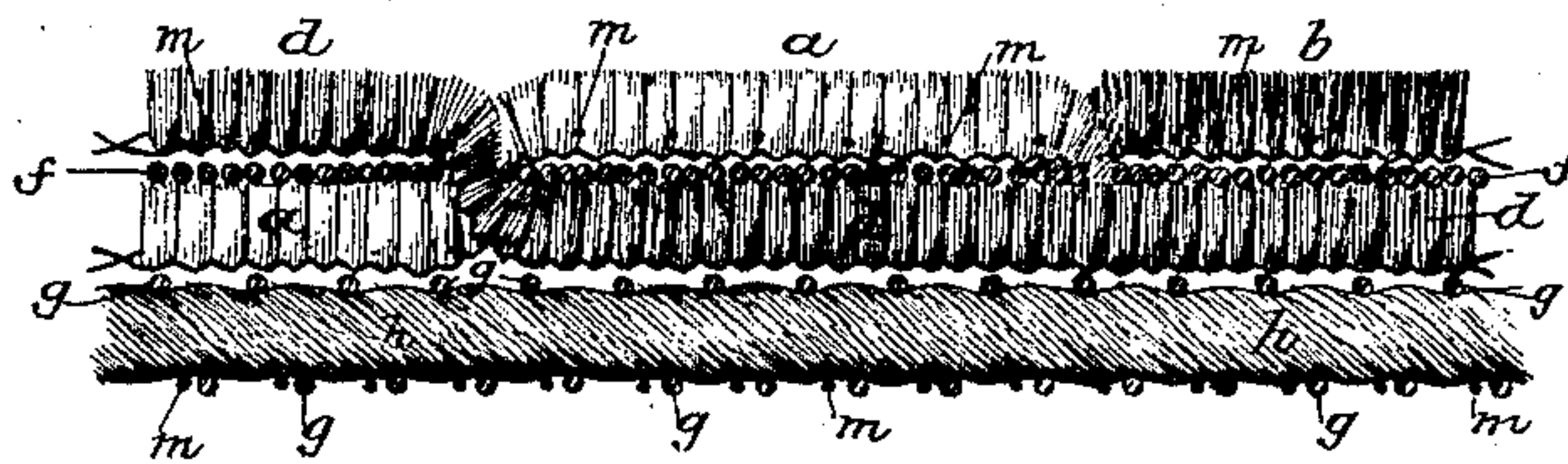
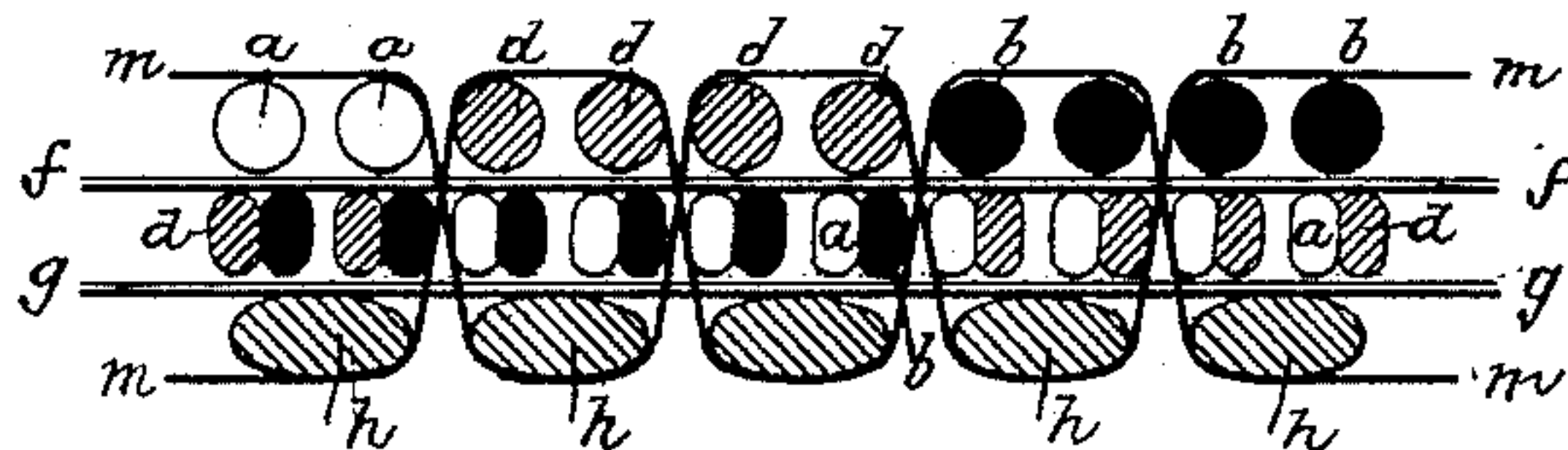


FIG. 3.



Witnesses:  
 Alex. Darkoff  
 R. Schleicher.

Inventor:  
Alfred Heald  
by his Attorneys  
Howson & Howson



# UNITED STATES PATENT OFFICE.

ALFRED HEALD, OF PHILADELPHIA, PENNSYLVANIA.

## WOVEN FABRIC.

SPECIFICATION forming part of Letters Patent No. 431,844, dated July 8, 1890.

Application filed November 19, 1889. Serial No. 330,880. (No specimens.)

*To all whom it may concern:*

Be it known that I, ALFRED HEALD, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Woven Fabrics, of which the following is a specification.

The main object of my invention is to make from comparatively inexpensive material, and by a simple process of weaving, a fabric which constitutes an acceptable substitute for the usual expensive Turkish rugs or carpets, some of the features of my invention, however, being applicable to the manufacture of other classes of fabric.

In the accompanying drawings, Figure 1 is an exaggerated diagram of a piece of fabric embodying my invention, the section being taken along the line of the warps. Fig. 2 is a diagram of the fabric on a section taken in the direction of the wefts; and Fig. 3 is a view similar to Fig. 1, but illustrating a modification.

The fabric shown in the drawings comprises a set of figuring-wefts, a stuffing or directing warp for governing the disposal of the figuring-wefts, a backing-ply composed of interwoven warps and wefts, preferably heavy and fine warps, whereby the face or figuring wefts are bound to the backing-ply. Each set of figuring-wefts may consist of two or more threads, depending upon the coloring of the pattern, three threads *a*, *b*, and *d* being shown in the drawings—representing, for instance, pearl, green, and gold, the three colors required by the pattern—the stuffing-warp being represented by *f*, the warps of the back ply by *g*, the wefts of said back ply by *h*, and the fine binding-warps by *m*.

In producing the fabric shown a very simple jacquard only is required, as the warp *f* is the only one to be jacked, although, if desired, all of the warps may be operated by the jacquard. As the warps *m* and *g*, however, only have to form plain sheds, the warp *m* is preferably controlled by a pair of journals, and a pair of heddles is employed for controlling the warps *g* of the backing-web. The figuring-wefts are picked successively into an open shed of the binding-warp, and with the warps *g* down, and, after each set of figuring-wefts has been shot in, a shed of the

backing-warp *g* is formed, and a thick shot of weft *h* is thrown in, the binding-shed being then changed and the operation repeated. In shooting in each figuring-weft the warp *f* is lowered at all points where the said weft is to appear in the pattern, and is raised at all other points, there being an operation of the said warp *f* for each shot of the figuring-weft, so that in any part of the pattern two of the figuring-wefts will be beaten in behind the weft that appears on the face, as will be clearly understood on reference to the drawings. The warp *f* is by preference comparatively close or heavy, so that besides determining the proper disposal of the figuring-wefts it serves to provide a firm backing for the face of the fabric, and effectually prevents any "grinning" of the buried wefts between the face wefts. The fine binding-warps preferably take the direct course shown in order to tie the face of the fabric to the back web, as this involves but a single operation of the journals for each set of wefts; but if said warps are controlled by the jacquard they may bind at any desired point on the face or back.

It will be evident that in carrying out my invention there need not be a thick weft in the backing-web for each repetition of the set of figuring-wefts in the face fabric. For instance, there may be but one of said backing-wefts for every two or three repetitions of the said set of figuring-wefts, as, for instance, in Fig. 3, in which there is one for every two repetitions, and fine warps may replace the thick warps *f* in some cases, as also shown in Fig. 3, the essential feature of difference between the face web of my improved fabric and an ordinary three-ply ingrain carpet being, aside from the fact that chenille wefts are used, that there is no actual application of the face fabric, and although the effect of a three-ply carpet is obtained in the pattern the disposal of the figuring-weft threads is effected by the jacking of but one set of warps and the binding by the operation of but one set of journals, the binding-warp being all of one color, as it is hidden by the chenille fur, and therefore does not mar the pattern. In some classes of fabric, however, spun or twisted threads may be substituted



for the chenille threads, if desired, as shown in Fig. 3, for instance, and the binding-warps *m* may constitute one of the warps of the back web and may pass over more than one of the  
5 figuring-wefts, as also shown in said figure.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A woven fabric having face and back  
10 webs with fine binding-warp tying the same together, the face-web comprising repeated sets of two or more figuring-wefts and a directing-warp separating the face weft from the back weft or wefts of each set, substan-  
15 tially as specified.

2. A woven fabric having face and back webs with fine binding-warp tying the same together, the said back web constituting a separate ply of interwoven warps and wefts,  
20 and the face web comprising repeated sets of two or more figuring-wefts, and a directing-warp separating the face weft from the back weft or wefts of each set, substantially as specified.

25 3. A woven fabric having face and back webs with fine binding-warp tying the same together, the said face web comprising repeated sets of two or more figuring-wefts of

chenille fur, and a directing-warp separating the face weft from the back weft or wefts of each set, substantially as specified. 30

4. A woven fabric having face and back webs with fine binding-warps tying the same together, the said face web comprising repeated sets of two or more figuring-wefts, and  
35 a directing and stuffer warp separating the face weft from the back weft or wefts of each set and forming a close backing for said face wefts, substantially as specified.

5. A woven fabric having face and back  
40 webs with fine binding-warp tying the same together, the back web constituting a separate ply of interwoven warps and wefts, and the face web comprising repeated sets of two or more wefts of chenille fur, and a directing  
45 and stuffer warp separating the face weft from the back weft or wefts of each set and forming a close backing for said face wefts, substantially as specified.

In testimony whereof I have signed my  
50 name to this specification in the presence of two subscribing witnesses.

ALFRED HEALD.

Witnesses:

R. SCHLEICHER,  
HARRY SMITH.